

RECEIVED  
NOV 14 2005  
BY: SBC

C. Tom Arkoosh, ISB No. 2253  
ARKOOSH LAW OFFICES, CHTD.  
P.O. Box 32  
Gooding, Idaho 83330  
Telephone: (208) 934-8872  
Facsimile: (208) 934-8873

Roger D. Ling, ISB No. 1018  
LING ROBINSON & WALKER  
P.O. Box 396  
Rupert, Idaho 83350  
Telephone: (208) 436-4717  
Facsimile: (208) 436-6804

Attorneys for American Falls Reservoir  
District #2

Attorneys for A & B Irrigation District  
and Burley Irrigation District

John A. Rosholt, ISB No. 1037  
John K. Simpson, ISB No. 4242  
Travis L. Thompson, ISB No. 6168  
BARKER ROSHOLT & SIMPSON  
LLP  
P.O. Box 485  
113 Main Ave. West, Suite 303  
Twin Falls, Idaho 83303-485  
Telephone: (208) 733-0700  
Facsimile: (208) 735-2444

W. Kent Fletcher, ISB No. 2248  
FLETCHER LAW OFFICE  
P.O. Box 248  
Burley, Idaho 83318  
Telephone: (208) 670-3250  
Facsimile: (208) 878-2548  
Attorneys for Minidoka Irrigation  
District

Attorneys for Milner Irrigation District,  
North Side Canal Company, and Twin  
Falls Canal Company

**BEFORE THE DEPARTMENT OF WATER RESOURCES  
OF THE STATE OF IDAHO**

IN THE MATTER OF DISTRIBUTION OF )  
WATER TO VARIOUS WATER RIGHTS )  
HELD BY OR FOR THE BENEFIT OF )  
A&B IRRIGATION DISTRICT, )  
AMERICAN FALLS RESERVOIR )  
DISTRICT #2, BURLEY IRRIGATION )  
DISTRICT, MILNER IRRIGATION )  
DISTRICT, MINIDOKA IRRIGATION )  
DISTRICT, NORTH SIDE CANAL )  
COMPANY, AND TWIN FALLS )  
CANAL COMPANY )

AFFIDAVIT OF  
JOHN S. KORENY

STATE OF )  
 ) ss.  
County of )

JOHN S. KORENY, being first duly sworn on oath deposes and states as follows:

## **Introduction**

My name is John S. Koreny. I am employed as a Principal Hydrologist by HDR Engineering, Inc. (HDR). HDR has been retained by the Idaho Surface Water Coalition (Coalition) to provide technical evaluations pertaining to hydrology and water supply. I serve as HDR's Project Manager for this project. My work address is: HDR Engineering, Inc., 500-108<sup>th</sup> Avenue NE, Suite 1200, Bellevue, Washington 98004. I reside in Seattle, Washington.

My professional experience, education and credentials are described in the previous affidavit dated October 6, 2005.

### **A. Statements of Fact**

1. The May 2, 2005 Amended Order (Order) regarding the Coalition delivery request relies on the steady-state and transient model calibration and the Base Case and Curtailment model scenario results obtained from Version 1.0 of the ESPAM ground water model.
2. IDWR and IWRRI staff directing the ESPAM ground water modeling stated during a meeting on September 1, 2005 that discrepancies have been found in Version 1.0 of the model requiring re-calibration and re-release of the model calibration and scenario results. These re-released files are known as Version 1.1 of the ESPAM ground water model. IDWR and IWRRI staff affirmed that the differences between Version 1.0 and 1.1 are significant enough that Version 1.0 should be replaced by Version 1.1.
3. The Order also relies on results from the IDWR Accounting Program.
4. Numerous letters and emails have been sent to IDWR by HDR requesting a complete distribution of the final modeling electronic files and utilities associated with the ESPAM ground water model and Accounting Program, as documented in my October 6, 2005 affidavit. In a letter from IDWR dated October 18, 2005, the Director has disclosed that other parties involved in the delivery request hearing have also requested these files.

5. At the time of preparation of my October 6, 2005 affidavit, electronic files necessary to replicate the modeling analysis described above in No. 1 had been requested and some files were provided by IDWR. HDR examined these files and found that some files were missing or that the wrong files had been provided. IDWR or IWRRI have provided assistance in obtaining the correct files. Since the time of preparation of my October 6, 2005 affidavit, IDWR has disclosed the following missing files and information regarding the ESPAM ground water model and the Accounting Program.

#### ESPAM Ground Water Model Files and Information

- a) On October 13, 2005, IDWR provided a response to a HDR memo dated October 12, 2005 that discussed the ESPAM Groundwater Model Files. The IDWR response to HDR's memo titled "Request for Clarification Regarding Discrepancy Found in Replicating IDWR Transient ESPAM Model Simulation for 1980-2002, 44 Stress Period Simulation" (**Exhibit A**) included instructions on how to use their data processing and balancer tools to create files used in the ESPAM Groundwater model. The IDWR response disclosed that it would be impossible to exactly reproduce the Ground Water Model files that IDWR used, since the original data files were "lost in an archiving accident".
- b) On October 13, 2005, IDWR provided a response to a HDR memo dated October 12, 2005 titled "Latest Version of ESPAM Transient MODFLOW files" (**Exhibit B**) confirming that the ESPAM 1.1 model files provided on September 28, 2005 constituted the actual final and correct version of the model. However, several files were revised after release of the calibrated model. Furthermore, a more recent posting dated October 5, 2005 was provided by IDWR with different file names and date stamps. Some files were provided in different formats which makes it difficult to compare to September 28, 2005 files. Research was necessary to determine which files should be used to replicate IDWR's transient model calibration.

- c) On October 14, 2005 a new data file was provided by IDWR with corrected tributary underflow values for ESPM 1.1 (**Exhibit C**). Data processing with this new file did not replicate the modeling analysis relied upon by the Order as described above in No. 1.
- d) Information necessary to replicate the Curtailment Scenario was provided in a memo dated October 18, 2005 (**Exhibit D**).
- e) The Curtailment Scenario was rerun by IDWR using Version 1.1 of the ESPM model. The Curtailment Scenario results for Version 1.1 of the model show significant differences in prediction of reach gains, documented in graphs and tables shown on **Exhibit E**, as compared to the results of the Curtailment Scenario using Version 1.0 of the model.

#### Accounting Model Files and Information

- f) Fourteen electronic files necessary to run the Accounting Program were provided on October 13, 2005 and October 17, 2005 (**Exhibit F** and **Exhibit G**, respectively). As of the first week of November, requested files that are necessary to run the Accounting Model are still being produced by IDWR.

#### **B. Opinion Regarding Schedule for Preparation of Expert Reports**

An amended schedule has been provided in the *Order Extending Time for Filing Expert Reports and For Hearing* dated October 17, 2005. The schedule requires submission of expert reports by December 30, 2005. It is my professional opinion that this schedule does not provide sufficient time for investigation of the ESPAM ground water model and for use of the Accounting Program in this project.

Our investigation of the ESPAM ground water model using the electronic files that have been disclosed to date has revealed that the model documentation was incomplete and files and utilities necessary to replicate the model results relied upon in the Order had not been made available until recently. Additionally, our investigation has shown that the ESPAM model files provided to date do not replicate the transient model

results provided in the model documentation. Further complicating matters, IDWR has recently released a new version of the model (Version 1.1). The Curtailment Scenario results are significantly different using Version 1.0 and Version 1.1 of the model. Additionally, files necessary to run the Accounting Program have only recently been provided and are still being provided by IDWR as of the first week in November, 2005.

The additional time required to complete an expert review of the material necessary to prepare for the scheduled delivery request hearing is the result of schedule delays caused by a slow release of requested material from IDWR combined with the fact that many of the files provided are poorly organized and without adequate documentation. If IDWR had provided all files and documentation when requested shortly after July 29, 2005 and if IDWR had not recently released a new version of the ESPAM model, than the time required to complete the required analyses could have been reduced. Additional time is now required to fully investigate these new modeling files and to complete the analyses required to prepare expert reports.

In my October 6, 2005 affidavit, I stated that approximately 6 months of time is required past the former November 4, 2005 schedule to review the ESPAM ground water model and the Accounting Program and to complete analyses for submission of expert reports for this project. This is still my opinion, and this opinion is supported by the information summarized above. This is also the opinion of the following senior HDR professionals working on this project whom I have personally interviewed regarding this matter including: Dr. Jerry Kenny, P.E., PhD, Allison MacEwan, P.E. and Larry Land, P.E. each with at least 15 years of experience working on similar projects of similar complexity.

Further the affiant sayeth naught.

Dated this 8 day of November 2005



John S. Koreny, RG, PH

Subscribed and sworn to before me this 8 day of November 2005



Notary Public for \_\_\_\_\_

Residing at Auburn, WA

My commission expires: Aug 9, 2009



## Exhibit A

To: Rick Raymondi, IDWR	
From: Kristi Shaw and John Koreny (HDR)	Project: Idaho Surface Water Coalition
CC: Allan Wylie, IDWR; Bryce Contor, IWRRI; Larry Land and Dave O'Rourke (HDR)	
Date: 24 October 2005	Job No: 27055

**RE: ESPAM Transient MODFLOW files****INTRODUCTION**

This memo is submitted to provide information on the results obtained by HDR after running the pre-processor ESPAM.exe electronic files provided by IDWR for the ESPAM transient ground water model.<sup>1</sup> We requested and obtained ESPAM.exe electronic input files from IDWR in an effort to re-create the MODFLOW input files provided for the 44-stress period transient model simulation. However, we were unable to replicate the results reported by IWRRI. Specifically, the output files created as a result of running the files provided with the ESPAM executable do not duplicate the ESPAM output files provided by IDWR for the 44-stress period transient model. Therefore, we are unable to duplicate the process used to develop the 44-stress period transient model using the files and utilities provided.

**ESPAM TRANSIENT MODEL PRE-PROCESSOR INPUT FILES**

Based on several email responses from Allan Wylie (IDWR) and Bryce Contor (IWRRI) on October 13<sup>th</sup> and October 14<sup>th</sup>, 2005 regarding clarification of the latest version of ESPAM Transient MODFLOW files and replicating IDWR's Transient ESPAM Model Simulation, we have attempted to recreate the transient model simulation referenced in IDWR's ESPAM Model Report (July 29, 2005).

We followed the process for the GIS/Fortran Recharge Tool and Balancer Tools, updated GIS input files using the corrected tributary underflow data file provided by IWRRI (October 14, 2005), and received output that did not match IDWR information provided in WaterBudgetData.zip folder on September 28, 2005. As shown in Table 1, the water budget input files are within plus or minus 1% difference from your water budget. These results are close, however; they do not match the output files provided. We understand from recent communications with Bryce Contor that this is because the original input files to ESPAM.exe are no longer available.

<sup>1</sup> ESPAM and READINP are pre-processing utilities that IWRRI developed and used to create the MODFLOW input files.



**Table 1- Comparison of HR Results with IDWR Transient, 44 Stress Period Simulation**

COMPONENT	from WaterBudgetData.zip New_Balance1.xls Annual Avg (acft)*	HDR (10/15/05) After Balancer Annual Avg (acft)*	% Difference After HDR Balancer
EIR	-5,473,229	-5,528,513	-1.0%
RNI	518,225	518,218	0%
PRI	1,723,916	1,723,918	0%
SWV	7,024,674	7,094,470	-1.0%
off	-67,950	-67,951	0%
fpt	-138,595	-138,590	0%
pch	294,480	294,474	0%
trb	933,918	933,918	0%
cnl	473,005	477,762	-1.0%
<b>Sub Total</b>	<b>5,288,447</b>	<b>5,307,706</b>	<b>-0.4%</b>

\* Average over calibration period (Stress Period 5 through Stress Period 41)

### CONCLUSION

According to our understanding of an email provided by IDWR (October 12, 2005), the latest version of ESPAM Transient MODFLOW files were posted on September 28, 2005 in a zipped folder titled "FullModTran". We are proceeding forward with our analysis. Please let us know immediately if the original files or subsequent updates are available that may correct this discrepancy. We will use the recharge file created by HDR on October 15, 2005, as discussed above and shown below on Table 1, (average annual recharge of 5,307,706 acre-ft/yr) in addition to MODFLOW input files provided in "FullModTran.zip" to replicate IDWR Transient ESPA Model Simulation..

We are providing this memo to document that the input files do not match those reported to be the files of record for this project and for the model runs used for the May 2, 2005 Amended Order. We intend to complete our analysis using the files that IDWR and IWRRRI have provided, unless the original correct files can be provided within a reasonable time period to complete the analysis necessary for the project. We have appreciated IDWR and IWRRRI's efforts in this matter. Please call John Koreny at 425-450-6200 to discuss this further.

To: Rick Raymond, IDWR	
From: Kristi Shaw and John Koreny, HDR	Project: Idaho Surface Water Coalition
CC: Bryce Contor, IWRRI, Allan Wylie, IDWR and Larry Land, HDR	
Date: 12 October 2005	Job No: 27055

**RE: Request for Clarification Regarding Discrepancy Found in Replicating IDWR Transient ESPA Model Simulation for 1980-2002, 44 Stress Period Simulation**

## INTRODUCTION

This memo is provided as a request for clarification regarding our inability to exactly replicate the process used to develop the transient ESPA model pre-processor files the 1980 to 2002, 44 stress period simulation. We request further consultation with IDWR/IWRRI to determine why we are not able to exactly replicate the IWRRI transient model pre-processor files using the ESPAM.exe and READINP.exe utilities.

## DETAILS OF HDR'S PROCESS TO CREATE TRANSIENT MODEL INPUT FILES

Based on Bryce Contor's response to HDR's October 3<sup>rd</sup> memo, HDR assimilated the GIS Recharge tool input files from the May 2004 Training CDs and additional files provided October 3<sup>rd</sup>. We used the Corrected ET Raster (dated 7/2/2004) for Stress Period 38, per Bryce's response. We then processed the GIS input files using ESPAM.exe, READINP.exe, Adjuster\_Only\_3.exe, Wrapper.exe, READINP.exe and Sumry\_22.Dec04 according to the October 3, 2005 memo from Bryce Contor entitled "*Step-by-step details of applying ESPAM and READINP.exe to calibration data for ESPAM1.1*" and the two October 4, 2005 memos from Bryce Contor entitled "*Applying Summary Tools to ESPAM.exe and READINP.exe output*" and "*Applying Balancing Tools to output of Recharge Tools*."

A water budget summary is presented in the following table, which compares our results (produced from Sumry\_22Dec04 processing) to information provided to us in the WaterBudgetData.zip file. We have included our results "before balancer" (i.e. after first two steps ESPAM.exe and READINP.exe) and "after balancer" (i.e. processing using Adjuster\_Only\_3.exe, Wrapper.exe, and rerun READINP.exe). We used the "balancer" multipliers listed in Figure 1 from the October 4, 2005 memo "*Applying Balancing Tools to output of Recharge Tools*".

**Table 1. Comparison of HDR Results with IWRRI-Provided Results for Transient, 44 Stress Period Run**

COMPONENT	from WaterBudgetData.zip	HDR (10/7/05)	HDR (10/7/05)	% Difference	% Difference
	New_Balance1.xls Annual Avg (acft)*	Before Balancer Annual Avg (acft)*	After Balancer Annual Avg (acft)*	Before HDR Balancer	After HDR Balancer
EIR	-5,473,229	-5,545,149	-5,528,513	-1%	-1%
RNI	518,225	517,391	518,218	0%	0%
PRI	1,723,916	1,720,474	1,723,918	0%	0%
SWV	7,024,674	7,081,053	7,094,470	-1%	-1%
off	-67,950	-68,088	-67,951	0%	0%
fpt	-138,595	-138,870	-138,590	0%	0%
pch	294,480	293,593	294,474	0%	0%
trb	933,918	1,052,194	1,069,043	-13%	-14%
cnl	473,005	476,831	477,762	-1%	-1%
<b>Sub Total</b>	<b>5,288,447</b>	<b>5,389,430</b>	<b>5,442,830</b>	<b>-2%</b>	<b>-3%</b>

\* Annual average over calibration period (Stress Period 5 through Stress Period 41)

### QUESTIONS FOR CLARIFICATION

**1. Should we be comparing the WaterBudgetData.zip information to “Before Balancer” results or “After Balancer” results?**

Please clarify if the GIS recharge tool input files (identified on pages 2 through 5 of the October 3, 2005 memo<sup>1</sup> from Bryce Contor have already been “balanced” or if we need to use the balancer programs after READIN.exe. The ESPAM Balancing Tools memo (Oct 4, 2005) describes the application of multipliers, stating “The GIS and tabular data available today were obtained by scaling the raw input directly (using identical multipliers, prior to operation of espam.exe. Therefore, the order of operations was different; T124 applied the first set of scalars *after* GIS operation and the results that will be obtained from the process outlined below will have had the first set of scalars applied *before* GIS operation. It is expected that results will differ insignificantly at the last few decimal places.” However, the procedures for recreating transient scenario (based on October 3, 2005 memo on “Use of GIS and FORTRAN Recharge Tools”, and October 4, 2005 memos on “Use of Summary Utilities” and “Balancing Tools”) seem to indicate that we should use the balancer tools after processing with ESPAM.exe and READINP.exe.

**2. Were the tributary underflow input files adjusted or updated by IWRRI/IDWR after the WaterBudgetData.zip files were created?**

The tributary underflow information provided to us is 13-14% greater than the WaterBudgetData.zip information (see Table 1 above). The tributary data file that we used was “TribDataBalanced.dbf (dated 5/10/04).

<sup>1</sup> “Step-by-step details of applying ESPAM.exe and READINP.exe to calibration data for ESPAM1.1”, October, 3, 2005.

**3. Were there changes in the EIR, SWV, and cnl data sets (files) or the processing by the GIS and/or Fortran tools that would explain the differences observed in Table 1?**

Though the differences are minor, we should be replicating the process and results that were used by IWRRI to develop the 44-stress period transient simulation and would like to confirm that we are using the correct files and procedures.

Thank you in advance for your attention to this request. Please call Kristi Shaw at 512-912-5100 to discuss this further.

# Bryce Contor Response Dated 13Oct2005

Kristi -

This e-mail is a first response to the "Request for clarification regarding discrepancy found in replicating IDWR transient ESPAM model simulation for 1980-2002, 44 stress period simulation." This is a brief initial answer. I will begin to work on a more complete response but it may take awhile. I know this is somewhat unsatisfying, sorry.

1. Should we be comparing... to "Before Balancer" or "After Balancer" results.

"After Balancer" results are the best approximation of ESPAM 1.1,  
"Before Balancer" results are the best approximation of ESPAM 1.0.

Unfortunately it will not be possible to exactly reproduce the process of obtaining MODFLOW input files because the raw input data were lost in an archiving accident. However, the MODFLOW input files themselves have been provided, so you can exactly reproduce the MODFLOW run for ESPAM 1.1.

The two paths are outlined below, as a different way of saying what was in the earlier memo:

A. Path actually used to create ESPAM MODFLOW input files

- a) Run raw input data (no longer available) through ESPAM.exe and READINP.exe.
- b) Run summary utilities to extract water budget information, make balancing decisions.
- c) Apply balancing coefficients to intermediate files (output of ESPAM.exe, input to READINP.exe), using adjuster and wrapper utilities.
- d) Run READINP.exe using balanced intermediate files. The outcome was the MODFLOW input files used in ESPAM 1.0.
- e) Re-balance water budget for ESPAM 1.1.
- f) Apply balancing coefficients to ESPAM 1.0 intermediate files (coefficients obtained in step (e) applied to intermediate files obtained in step (c)) using adjuster and wrapper utilities. The outcome is the intermediate files actually used, which you have received as T124.\*.
- g) Run READINP.exe using re-balanced intermediate files. The output is the MODFLOW input actually used in ESPAM 1.1.

B. Path suggested to fulfill your desire to approximately reproduce the process:

- a) Start with the input data from the May training CDs, which should have been the raw data multiplied by the same balancing coefficients that were used in step (c) above.
- b) Run ESPAM.exe to obtain intermediate files.
- c) Use adjuster and wrapper utilities to apply new coefficients (described in steps (e) and (f) above) to intermediate files.
- d) Run READINP.exe to obtain MODFLOW input files. The output should approximate what was used in ESPAM 1.1.

2. Were the tributary underflow files updated or changed....

The 13% discrepancy you found suggests that they may have been. I will try to research this and find an answer.

If your desire is simply to understand and view the spatial and temporal distribution of tributary underflow values that were actually used, that information can be extracted from the T124.trb file, using the detailed description of file structure found in the May Training manual. This is true for all other components of GIS and tabular input as well; the best representation of what was actually used is found within the T124.\* files.

3. Were there changes... that would explain the [other] differences observed in Table 1?

Except for the tributary underflow, the differences in Table 1 all appear to be consistent with the difference in processing order described above and consistent with my statement in the memo that "it is expected that results will differ insignificantly."

In summary, it appears that you have successfully verified (except for tributary underflow) that the input GIS and tabular data sets we have provided are compatible with the actual MODFLOW input files used for ESPAM 1.1. I will try to find an explanation for the difference in tributary underflow.

Bryce

## Bryce Contor Response Dated 14Oct2005

Kristi -

In the months prior to the May 2004 training, I had prepared some alternate water budgets for hypothesis testing. When I made the May 2004 training CDs, one of the alternate tributary underflow tables wound up on the CD rather than the one that had been used in the calibration simulations. As near as I can tell by following the trail through my archives, in all subsequent CDs and transmissions of calibration data, I've consistently propagated the same blunder. This includes the copy I have of the CD that I sent Allan Wylie in July 2005.

The attached tributary underflow data file contains the correct values for ESPAM 1.1, already multiplied by balancing coefficients. If you incorporate these new data by making a new simulation from an existing simulation in ESPAM.exe, when you run the adjuster utility you will want to use a multiplier of 1.0 for trib underflow.

Bryce.

## Exhibit B

**Koreny, John S.**

---

**From:** Wylie, Allan [Allan.Wylie@idwr.idaho.gov]  
**Sent:** Thursday, October 13, 2005 7:43 AM  
**To:** Koreny, John S.; Raymondi, Rick  
**Cc:** Shaw, Kristine; Land, Larry; Bryce Contor; Wigle, Victoria  
**Subject:** RE: Questions on ESPAM Model File Postings in September and October  
**Attachments:** HDR Memo\_Question on ESPAM Transient Preprocessor Files1.doc

John

Enclosed is your memo with my responses to your questions in blue. Feel free to contact us if you have any more questions.

Allan

-----Original Message-----

**From:** Koreny, John S. [mailto:John.Koreny@hdrinc.com]  
**Sent:** Wednesday, October 12, 2005 4:05 PM  
**To:** Raymondi, Rick  
**Cc:** Wylie, Allan; Shaw, Kristine; Land, Larry; Bryce Contor  
**Subject:** Questions on ESPAM Model File Postings in September and October

Rick-

Enclosed is a memo with specific questions requesting clarification on some of the model file posting in September and October.

Kristi Shaw with our firm is handling this request. Should she contact Allan Wylie or Bryce Contor directly, or another person at IDWR? She can be reached at (512) 912-5118.

Thanks,

John Koreny

10/21/2005



To: Rick Raymondji, IDWR	
From: Kristi Shaw and John Koreny, HDR	Project: Idaho Surface Water Coalition
CC: Allan Wylie, IDWR, Bryce Contor, IWRRI, Larry Land, HDR	
Date: 11 October 2005	Job No: 27055

Document2

**RE: Latest Version of ESPAM Transient MODFLOW Files**

**INTRODUCTION**

The purpose of this memo is to confirm that the files for Version 1.1 of the ESPA model that have been placed on the IDWR web page on October 5, 2005 are the actual final and correct version of the model and to ask whether there has been a change in the files since the IDWR web page posting of Version 1.1 of the model on September 28, 2005.

**HAS THERE BEEN A CHANGE IN THE ESPA MODFLOW  
FILES POSTED ON 10/5/05 IN COMPARISON TO THE POSTING ON 9/28/05?**

**Allan Wylie's responses are in blue.**

**9/28/05 Posting**

A zipped folder entitled "FullModTran" was posted by IDWR to the IDWR ftp site on September 28, 2005. A list of files provided in "Allan\_ESPAM\_SwCo\_List.pdf" (also posted on 9/28/05) stated that FullModTran.zip contains the Version 1.1 Full transient calibrated ESPA model. According to the name file included in FullModTran.zip, the MODFLOW files used in the simulation (with time stamp) are:

- Fulltr.ba6                      Date: 7/13/05    9:20 am
- Conftr.bc6                     Date: 7/13/05    9:16 am
- Fulltr.oc1                     Date: 9/03/03    2:18 pm
- Full.riv                        Date: 6/20/05    1:23 pm
- Full.drn                        Date: 6/20/05    1:23 pm
- Fulltr.rch                      Date: 9/03/03    2:05 pm
- Standard.lmg                 Date: 5/22/03    1:33 pm
- Steady.hds                    Date: 6/20/05    1:23 pm
- T123ba1.rch                  Date: 5/26/05   10:44 am
- Fulltr.dis                     Date: 1/11/04    4:57 pm
- Fulltr.bud                     **Missing**
- Fulltr.hds                     **Missing**

### 10/05/05 Posting

On October 5, 2005 a folder entitled "ver\_1\_1\_calibration\_files" was posted by IDWR to the IDWR ftp site. The folder contains MODFLOW files for a transient run entitled "BIGTRAN or BIGTRN2K":

- BIGTRN2K.ba6      Date: 6/29/04      9:07 am
- BIGTRN2K.bc6      Date: 4/25/03      5:06 pm
- bigtrn.ocl          Date: 9/03/03      2:18 pm
- upsnk.riv          Date: 5/30/05      6:20 am
- lowsnn.drn          Date: 5/30/05      6:20 am
- bigtran.rch          Date: 9/03/03      2:05 pm
- bigtrn2k.img          Date: 5/22/03      1:33 pm
- bigss.hds          Date: 5/30/05      6:20 am
- T124.rch            Date: 5/26/05      10:44 am
- BIGTRN2K.dis          Date: 1/11/04      4:57 pm
- bigtrn.bud          Date: 5/30/05      6:21 am
- bigtrn.hds          Date: 5/30/05      6:21 am

### Specific Questions

The recharge file that is called on in the .lst file is t124.rch (5/26/05 10:44 am). **Is this the same t124.rch version that was provided in WaterBudgetData.zip (posted 9/28/05)?**

**Yes**

The MODFLOW files in the 10/05/05 posting have file dates older than or equal to those posted in the 9/28/05, as seen above. **Which MODFLOW input files are representative of the latest ESPAM transient 44 stress period simulation? If neither one of the simulations described above represent the latest transient model, please provide the most current version.**

**Both MODFLOW basic packages are the same, both block centered flow packages are the same, both output control files are the same, both river packages are the same, both starting head files are the same, both recharge packages and recharge array files are the same, both discretization packages are the same, the ibound, specific yield, and transmissivity arrays are the same. The names of these files were changed, before being posted on the IWRRRI web site and on the IDWR ftp site. The drain packages are different because of post calibration adjustments discussed in the TRANSIENT CALIBRATION MODEL FIT section of the Draft Final Report**

If 9/28/05 files are the latest version, then we need the 2 missing files (Fulltr.bud and Fulltr.hds).

Fulltr.bud and Fulltr.hds are MODFLOW output files. If you run the model, they will be created.

Thanks in advance for your attention to this request. Please call Kristi Shaw at 512-912-5100 to discuss this further.

## Exhibit C

## Koreny, John S.

---

**From:** Raymondi, Rick [Rick.Raymondi@idwr.idaho.gov]  
**Sent:** Saturday, October 15, 2005 2:09 PM  
**To:** Adam DeVoe (E-mail); Carlson, Ron; James Lochhead (E-mail); James Tucker (E-mail); Jeff Fereday (E-mail); John Rosholt (E-mail); John Simpson (E-mail); Josephine Beeman (E-mail); Kathleen Carr (E-mail); Kent Fletcher (E-mail); Matt Howard (E-mail); Merritt, Allen; Michael Gilmore (E-mail); Mike Creamer (E-mail); Roger Ling (E-mail); Rounds, Lewis; Sarah Klahn (E-mail); Scott L. Campbell (E-mail); Terry Uhling (E-mail); Tom Arkoosh (E-mail); Travis Thompson (E-mail); Yenter, Cindy (Hodges); Allan Wylie; Anderson, Hal; Bryan Kenworthy; Bryce Contor (E-mail); Christian Petrich (E-mail); Chuck Bredecke (E-mail); Chuck Brockway; Donna Cosgrove (E-mail); Dreher, Karl; Gary Johnson (E-mail); Greg Sullivan (E-mail); Jack Harrison (E-mail); Jim Bartolino (E-mail); Koreny, John S.; Jon Gould; Karl Tarbet; Kathy Peter (E-mail); Lindgren, John; P. E. Jonathon C. Bowling (E-mail); Paul Rauch; RD Schmidt (E-mail); Rick Allen (E-mail); Steve Lipscomb (E-mail); Tim Miller; Vincent, Sean 'kkc@hydrosphere.com'; Shaw, Kristine  
**Cc:**  
**Subject:** FW: new ftp posting

Please note:

On 10/14/2005, IDWR updated and added to the following ftp posting:  
Question\_on\_Transient\_Model\_Files.PDF (previously posted on 10/13/05). The new file posted is Question\_on\_Transient\_Model\_Files.zip.

> -----Original Message-----

> From: Wylie, Allan  
> Sent: Friday, October 14, 2005 3:38 PM  
> To: Raymondi, Rick; Vincent, Sean  
> Subject: new ftp posting

> Rick, Sean

> I posted further clarification from Bryce regarding balancing the  
> water budget. I added an additional e-mail response to the  
> Question\_on\_Transient\_Model\_Files.PDF and a DBF table. The PDF and  
> DBF are combined in Question\_on\_Transient\_Model\_Files.zip

> Allan Wylie  
> Hydrologist  
> Idaho Department of Water Resources  
> 322 E. Front St.  
> PO Box 83720  
> Boise ID, 83720-0098  
>  
> ph 208 287 4963  
> allan.wylie@idwr.idaho.gov  
>  
>

## Exhibit D

## MEMORANDUM

To: HDR  
Fr: Bryce Contor  
Date: 18 October 2005

Re: Second response to memo: "RE: Curtailment Scenario Water Right Data Tables" in file "HDR\_memo on Curtailment Scenario Water Rights Data Tables.doc" attached to e-mail from John Koreny, 12 October 2005

---

This memo is a more complete follow-up to the e-mail response I sent to Kristi Shaw of HDR on 12 October 2005. It is intended to enable the reader to understand the processing of the point-of-diversion/priority-date data, and fully understand and evaluate the data that were used in the Curtailment Scenarios. As many as possible of the input data are provided, or samples similar to the input data. All the utilities that were used are also provided and described.

Unfortunately, this memo does not fully satisfy the request to provide all input data used. There are two reasons for this deficiency. The first is that in retrospect, my archiving practices are not nearly as adequate as I imagined them to be at the time. The second is that this request was not received in a timely manner. Had the request been put forward in May 2004, when input from ESHMC input was sought regarding methods, or the fall of 2004 when the Curtailment Scenarios were being evaluated, a much more satisfying response would have been possible.

This memo also corrects an assertion that I made in the 12 October 2005 e-mail regarding the summing of diversion rates. The apportionment of diversion rate among points of diversion for a given water-use was limited by the rate by use for each water right. In the e-mail I asserted that the uses by point-of-diversion and use were limited to the overall maximum rate for each right. The limitation that was is actually a more appropriate assumption for looking at water uses individually, as was done in the curtailment scenarios. Please see the description for data field "Pod\_cfs" below and the discussion of utility "VB\_POD\_RATE" in the final section.

### DESCRIPTION OF DATA SET USED IN SCENARIOS

The scenarios used data set "pod\_gw\_APP.shp," which may be downloaded as "ftp://ftp.state.id.us/idwr/Outgoing/SWCoalition/CURTAIL\_GIS.zip." This is a point shapefile that includes attributes that map nominal diversion rate to model cells, by water use and by priority date. The processing to obtain this shapefile is described in a later section. The general procedure is that spatial point-of-

diversion data (from two different data sets plus some hand querying of the IDWR website) were joined to tabular water-use data in a many-to-many join, then further updated by joining additional data for water right applications.

To aid in understanding and interpreting the attribute table, the content, source and meaning of the attribute-table fields are listed below.

Data fields used in scenario analysis.

Cell_ID	This field contains the cell identifier used in the model grid. It allows mapping the priority dates to model cells. IWRR used GIS rasters to assign row and column numbers, then calculated Cell ID from rows and columns using string manipulation. I have since learned that the "identity" function of X-Tools in ArcView 3.2 would have done this more easily. Perhaps ArcGIS also has an identity function.
Pnum	This field contains an integer number representing the priority date of the water right, relative to a value of zero for 31 December 1899. Numbers for priorities from 1 January 1900 onward were calculated using Microsoft Excel. Dates prior to 1 January 1900 were calculated using a small Visual Basic utility. The utility is not available but the correspondence between dates and priority numbers is available in file "DateList.xls" from Disk Two of the May 2004 training CDs. Original priority-date data were in the point of diversion data sets obtained from IDWR.
Pnum_e	This is the "Pnum" field adjusted for water rights that are claimed, recommended or decreed as enlargements in the Snake River Basin Adjudication. Any right flagged as an enlargement by IDWR (see field "enlarge" below) has the value of 34425 in field Pnum_e instead of the value that is found in field Pnum. The value 34425 corresponds to 1 April 1994. Enlargements are typically recommended and decreed with a condition similar to the following, from right 33-10033: "THIS WATER RIGHT IS SUBORDINATE TO ALL WATER RIGHTS WITH A PRIORITY DATE EARLIER THAN APRIL 12, 1994, THAT ARE NOT DECREED AS ENLARGEMENTS PURSUANT TO SECTION 42-1426, IDAHO CODE. AS BETWEEN WATER RIGHTS DECREED AS ENLARGEMENTS PURSUANT TO SECTION 42-1426, IDAHO CODE, THE EARLIER PRIORITY RIGHT IS THE SUPERIOR RIGHT."

I do not recall whether field Pnum or Pnum-e was used in



the Curtailment Scenarios. Either could be valid depending on one's assumptions about what would happen to enlargement rights in an actual curtailment. In data set "pod\_gw\_APP.shp," enlargements are about 1:1% of the total irrigation diversion rate, so for practical purposes it makes little difference.

#### Pod\_cfs

This is the nominal diversion rate in cubic feet per second associated with the given record in the data set. As explained below, there is a record in the data set for each unique combination of water right, point of diversion and water use. The calculations used to populate this field are explained below in the section "VB\_PODRATE."

Note that in the 12 October 2005 e-mail response I asserted that for a given water right, all values of "Pod\_cfs" sum to the maximum diversion rate listed for the right in the original IDWR point-of-diversion data. That was incorrect; this rule was enforced for each *use* but not for each *water right*. Note that it is common for non-simultaneous uses to sum to more than the total authorized rate. The intent is to authorize the full amount of water to be applied to either use as desired, but not to authorize more than the underlying basic diversion rate.

The implication of the apportionment done here is that the correct result will be obtained when looking at a particular water use. Had the programming been done to limit the sum to the maximum rate for each water right, the correct result would have been obtained when looking at all water uses at one time. The curtailment scenarios looked at a single use, irrigation, so the approach used is appropriate for the way the data were applied.

#### Status

This field originated as the IDWR water-right-record status. If the water right is anything but an application, the status has been overwritten with the value "NOT\_APP." For applications, the actual status of the application ("Active," "Withdrawn," "Rejected," etc.) is listed. In scenario generation, only records with status "NOT\_APP" are used.

This field was obtained by populating field "Status" with the values in the attribute table of applications data set "espa-app-pod.shp," included in the zipped archive that contains this memo, then overwriting with "NOT\_APP" for any record in the point-of-diversion data that is not included within the

applications data set (data set "espa-app-pod.shp," which was obtained from IDWR in the summer of 2004).

**Use** This is the purpose of water use for the record, obtained from IDWR tabular water-use data. The process of populating this field is described below. In the Curtailment Scenarios, only "Irrigation" points were used. The original point-of-diversion data from IDWR included a field describing only the primary water use for each water right.

#### All data fields

<b>Basin</b>	IDWR water right numbers consist of a prefix, a sequence number, and a split suffix. For instance, the number "99-1234D" would indicate the fourth water right resulting from split(s) of original right 1234 in (fictitious) Administrative Basin 99. Field "Basin" identifies the IDWR administrative basin and therefore the numeric part of the prefix of the water right number. <sup>1</sup> From IDWR point-of-diversion data.
<b>Basinnumbe</b>	IDWR administrative basin from water right number. Redundant information from join of application data set, populated only for points associated with water-right applications. From IDWR data applications data.
<b>Cell_id</b>	Described above.
<b>Col_id</b>	Column identifier from ESPAM model grid. See Cell_id description above.
<b>Datasource</b>	Describes the data source used to describe X/Y location. Populated only for points associated with applications. From IDWR application data.
<b>Enlarge</b>	A value of "1" means the right is classified as an enlargement in the Snake River Basin Adjudication. From IDWR data.
<b>Fid_1</b>	I believe this is an ESRI-generated field associated with the join process.
<b>Flag</b>	This field was generated in the IWRRI many-to-many join process. It will be explained in the final section, under the description of utility VB_PODRATE.

---

<sup>1</sup> See field "WR" for discussion of the non-numeric part of prefixes.

Id	Record identifier generated automatically by ESRI software.
Metaltagnu	This field was carried forward in the join of the application data set. It is empty. In a full data set which included rights that had been investigated in a water rights exam, adjudication exam or water measurement exam, or drilled under a recent drilling permit, this field would contain the number on the metal tag installed by the examiner or driller. From IDWR application data.
New_id	This number was generated by utility VB_MULT_ROWS for use in the IWRRI many-to-many join. The format is <right_id>.<pod_number>.<use_number>. For instance, "100.2.5" would indicate the record associated with Water Right ID 100, second point of diversion, fifth use. A record exists for each unique combination of water right, point of diversion, and use. A water right with two wells and three uses would appear as six records.
No_pods	Number of points of diversion. Calculated by IWRRI from IDWR data by utility VB_COUNT_USES as described in a later section.
No_uses	Number of water uses. Calculation by IWRRI using VB_COUNT_USES as described in a later section.
Overallmax	The overall maximum diversion rate for the right. From IDWR point of diversion data.
Owner	Owner of the water right. This field was present in all point-of-diversion data obtained by IDWR but was purged from the data used in the many-to-many join. When the applications data set was joined, this field was included but is only populated for records that are applications.
P_date	Priority date of the water right from IDWR point of diversion data. Note that this field does not have consistent formatting and is difficult to use directly. IWRRI processing relied on field "Pnum" or "Pnum_e" described above.
Parts	GIS field populated automatically by ESRI software.
Pnum	Described above.
Pnum_e	Described above.

Pod_cfs	Described above.
Pointofdiv	IDWR-supplied point of diversion identification number from point-of-diversion data. Not fully populated.
Priorityda	Redundant priority field from joining of applications data set. Provided by IDWR in the applications data set.
Right_id	Water-right record identification number from IDWR database. This is an internal data-base tracking number only, it is not the water right number. This value was included in both the point-of-diversion and water-use data, allowing the many-to-many join described in a later section.
Rightid	Redundant database identification number from the applications data set.
Row_id	Row number from the ESPAM model grid. See "Cell_id" discussions above.
Seq	Sequence number from the IDWR water right number. Provided by IDWR in the point of diversion data.
Sequencenu	Redundant sequence number from the applications data set.
Shape	GIS field generated automatically by ESRI software.
Source	Water source from IDWR data, for applications data set. This field was purged from other IDWR data since only ground-water rights were requested and included in the data.
Sourcequal	Source qualifier data from applications data set. This field is empty.
Sourcethem	Source theme. The original point of diversion data from IDWR included some records with incomplete information. A second data set was obtained from IDWR and enhanced by manual queries from the IDWR database. These two data sets were merged; field "Sourcethem" identifies the GIS theme that supplied the particular point in question. The names in the field are names of intermediate IWRRI products, not names of original data files. This field was generated and populated by the GIS software in the process of merging the point data.

Splitsuffi	Redundant water-right suffix field from the applications data set.
Status	Described above.
Suffix	Water right suffix from IDWR point of diversion data.
Tributar_1	A water-right field from the IDWR "applications" data set. This field is empty for all records in pod_gw_APP.shp.
Tributaryo	An additional water-right field from the IDWR "applications" data set. This field is also empty for all records in pod_gw_APP.shp.
Use	Described above
Use_code	Numeric code corresponding to water use. From IDWR tabular water-use data.
Wr	IDWR water-right number in string format, from IDWR point of diversion data. These are actually truncated water right numbers that omit letter prefixes (such as the prefix "A" that identifies adjudication claims or the prefix "R" that identifies adjudication recommendations). From IDWR data.
X	Easting coordinate in meters, IDTM projection. Generated using GIS tools.
Y	Northing coordinate in meters, IDTM projection. Generated using GIS tools.

## **SAMPLE INPUT DATA PROVIDED**

The zipped file that contains this memo also contains sample data which are either the data used to generate pod\_gw\_APP.shp or are data of similar format. Files include:

Data set Pods\_idtm.shp is a point shapefile from IDWR similar to the point-of-diversion data used in pod\_gw\_APP.shp. The conceptual outline of the query performed by IDWR was described in my 12 October 2005 e-mail to Kristi Shaw. As described above, two data sets (including some manual updates) are actually reflected in the final data set. In preparation for the many-to-many join, these data sets received the following adjustments:

1. Purge "Owner" field (since some owner names contain commas or other characters seen by GIS or Visual Basic as delimiters or control characters).
2. Add and populate field "enlargements." This was based on a tabular data set from IDWR, joined on the basis of water-right ID. I have not located a copy of the original enlargement data set.
3. Re-project to IDTM (data from IDWR were in projection IDTM83).
4. Add and populate fields for X and Y coordinates.
5. Add and populate fields "Pnum" and "Pnum\_e" as described above.
6. Some fields not pertinent to the analysis were purged at this point or later in the process.

Data set espa-app-pod.shp is the "applications" point shapefile from IDWR that was actually used to populate field "Status." This is a shapefile of water-right IDs that were still applications as of the date of creation. It is in projection IDTM83 but was not re-projected by IWRRI, since only the tabular data from the attribute table were used in creating pod\_gw\_APP.shp. This applications data set was used for only one purpose: If a record in pod\_gw\_APP.shp joined to data set espa-app-pod.shp, it was an "application" and its status was retained. All other records in pod\_gw\_APP.shp were flagged as "NOT\_APP" and were used in curtailment scenarios. Only ground-water records from espa-app-pod.shp were used.

Data-base file W\_USE\_TBL.dbf is a table of water uses from IDWR dated May 28, 2004. It or a very similar table was used to define water uses in the generation of pod\_gw\_APP.shp.

Fields "TOTALACRES," "ACRELIMIT" and "USEVOL" were not used. Field "ACRELIMIT" could potentially be a candidate proxy for consumptive use, but examination of a selection of water rights confirmed that this field is not uniformly populated for all rights.

## PROCESSING OF DATA

This is a general description of processing flow, rather than a step-by-step list of instructions.

1. The point-of-diversion data are prepared as described above for data set "Pods\_IDTM.shp." The data could also be trimmed to the spatial extent of the model boundary. This was done in preparation of pod\_gw\_APP.shp in order to limit the size of the data files. The modified point-of-diversion attribute table is then exported as a comma-delimited ASCII text file.

The point of diversion data have one entry for each unique combination of water right and point of diversion. A water right with two points of diversion

will have two records in this data set.

2. The water-use data are also exported as a comma-delimited ASCII text file. These data contain one record per water use, for each water right. A water right with three uses will have three entries.
3. Both sets of data are sorted in order of Right ID. I used the VB utility described below but a computer with large memory and a fast processor could perhaps sort the data within a spreadsheet.
4. Utility "VB\_COUNT\_USES" is applied to both sets of data.
5. The resulting text files (number of uses per Right ID, number of PODs per Right ID) are joined to the point-of-diversion data by field Right ID. They are also joined to the water-use data by field Right ID. I have had bad luck converting between Access, text files, and GIS files, so I have done all joins within ArcView 3.2.
6. The point-of-diversion text file and water use text files are both run through utility VB\_MULT\_ROWS. This utility duplicates each point-of-diversion record for every water use, or duplicates each water-use record for each point of diversion, for a given water right. The resulting files are joined on field "New\_ID." In an ArcView 3.2 join, the order of joining is important. The *uses* table must be joined to the *point of diversion* tables so that no point-of-diversion records are lost if there is not a corresponding use record for a particular Right ID.
7. The joined file is run through utility VB\_PODRATE. The result is a comma-delimited text file that contains a record for each unique combination of water right, point of diversion, and water use. Each record has an associated point-of-diversion cfs rate (field Pod\_cfs in data set pod\_gw\_APP.shp). For each *water use*, the values for "point of diversion cfs" for all points of diversion sum to the total rate for the water right *for that use*. Each record also contains the X/Y coordinates of the location in projection "IDTM" and the model-grid-cell identifier.
8. The text file is converted to GIS point shapefile using the "Add Event Theme" function of ArcView 3.2. It also could be converted using the "X Y Data" function of ArcGIS.
9. If the original point-of-diversion data do not contain a field identifying water-right applications, these data are joined to the attribute table of the shapefile and an appropriate field is populated to allow selection of water rights that are not applications. Data set espa-app-pod.shp was used in preparation of pod\_gw\_APP.shp.

## UTILITIES

The zipped file that contains this memo also contains the utilities that were used in processing pod\_gw\_APP.shp. The source code, text-file listings of the source code, and compiled executables are provided. However, these utilities were run in their un-compiled form in generating pod\_gw\_APP.shp.

*VB\_SORT* was used to sort the point-of-diversion and water-use data tables. These tables had 55,000 to 60,000 entries and the computer I was using at the time was not capable of sorting the data within a spreadsheet. The data were converted to comma-delimited text files before applying this utility.

*VB\_COUNT\_USES* was applied to the sorted point-of-diversion data to count the number of points of diversion for each Right ID. It was also applied to the water-use data to count the number of uses for each Right ID.

*VB\_MULT\_ROWS* was applied to the point-of-diversion data to create additional records for each use. It was also applied to the water-use data to create additional records for each point of diversion. This utility generated and applied the "New\_ID" data field described above, which allowed the many-to-many join to be performed.

*VB\_PODRATE* was applied to the joined point-of-diversion/water-use-table to calculate the diversion rate per record. Each record represented a unique combination of water right, point of diversion and water use.

This utility generally performed the simple calculation of dividing (rate-per-use) by (number of points of diversion). In some records, there is not a diversion rate given for the individual use. This may be because there was not a corresponding record in the use table for the Right ID, or it may be because the use table omitted a diversion rate for a minor use incidental to the primary use of a water right.

The original point-of-diversion data set contained a value for point-of-diversion cfs rate, but this was based only on the primary water use. In *VB\_PODRATE*, if the water use was irrigation and the water-use data table did not provide an individual diversion rate for the irrigation use, the rate from the original point-of-diversion data set was used. If the per-use rate was omitted and the use was not irrigation, a value of zero was applied, on the assumption that this was a minor secondary use.

The utility *VB\_PODRATE* also populated the "Flag" field with a value that described the calculation used. If the point-of-diversion cfs rate was calculated by dividing (rate-per-use) by (number of points of diversion), the value assigned to "Flag" was "Calc." If the point-of-diversion rate was extracted from the original

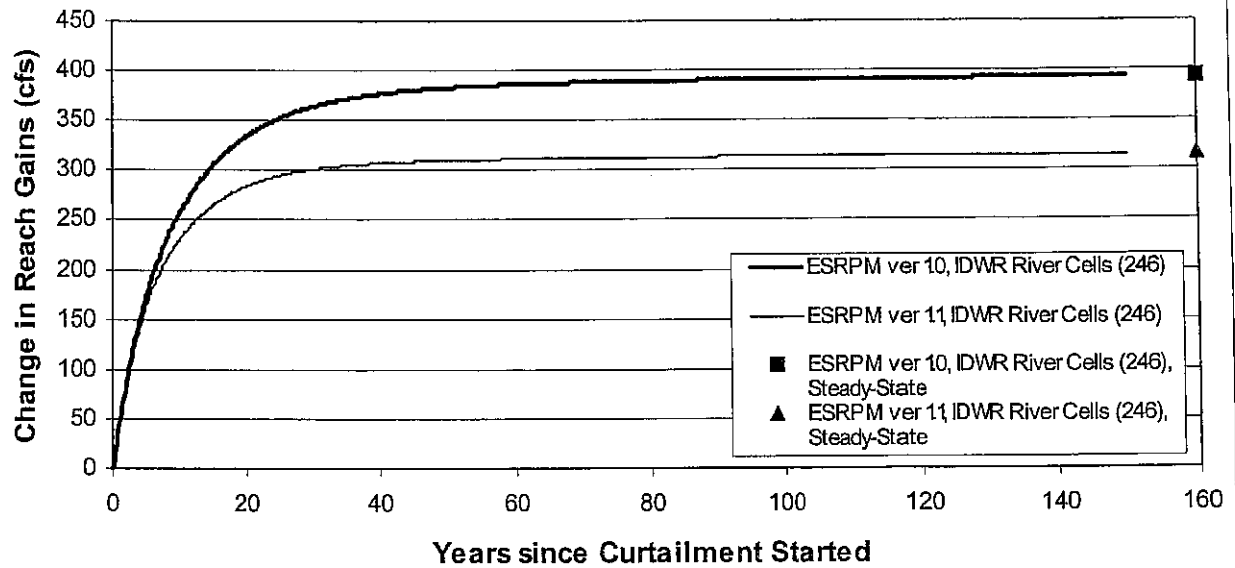


data file, the value assigned was "OldData." A value of "NoData" was assigned for the minor uses whose diversion rate was set to zero.

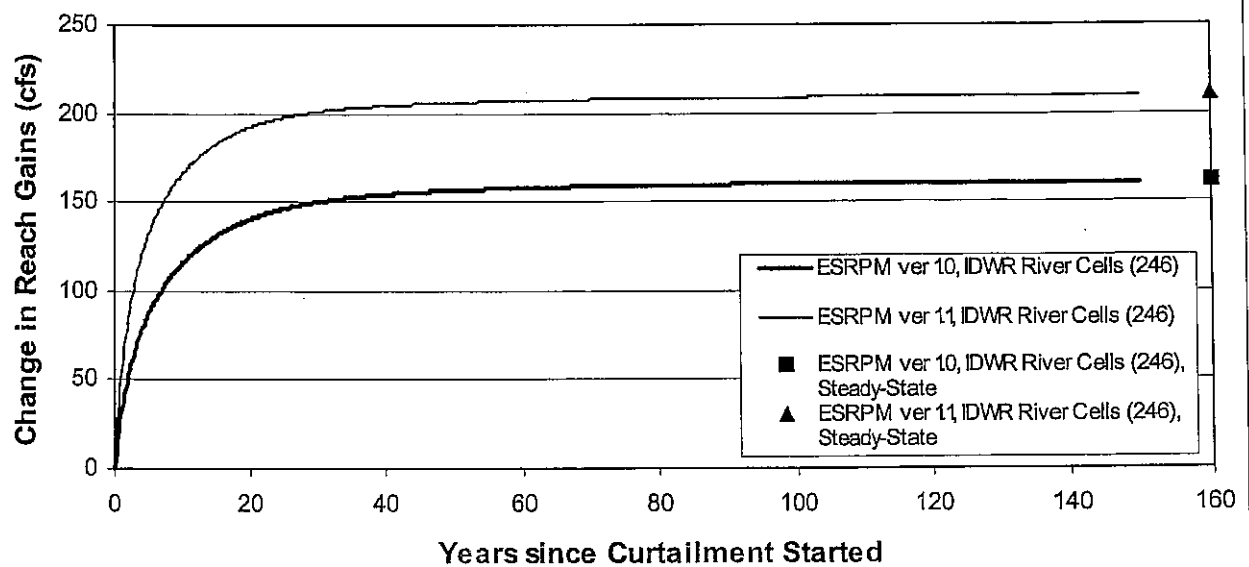
This utility did not compare the sum of diversion rates for individual uses to the overall limit for the water right. This is different than my representation in the 12 October 2005 e-mail. As a consequence of this design, the results of VB\_PODRATE are more appropriate for analyses *by water use* than for analyses that look at *more than one water use simultaneously*.

## Exhibit E

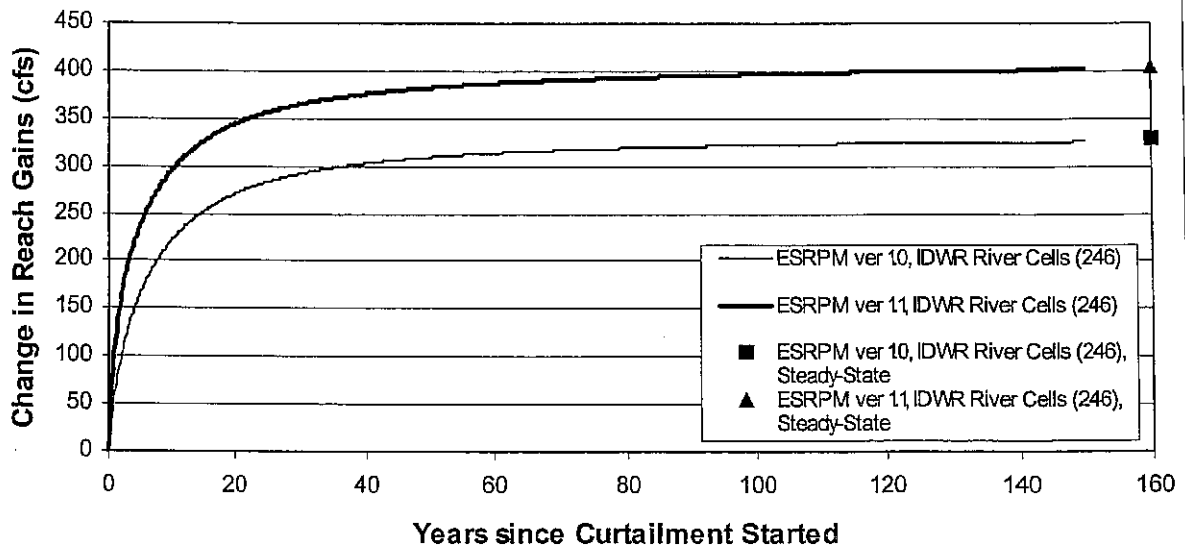
### Change in Reach Gains Due to Curtailment of 1870 and Later Groundwater Rights Ashton to Rexburg



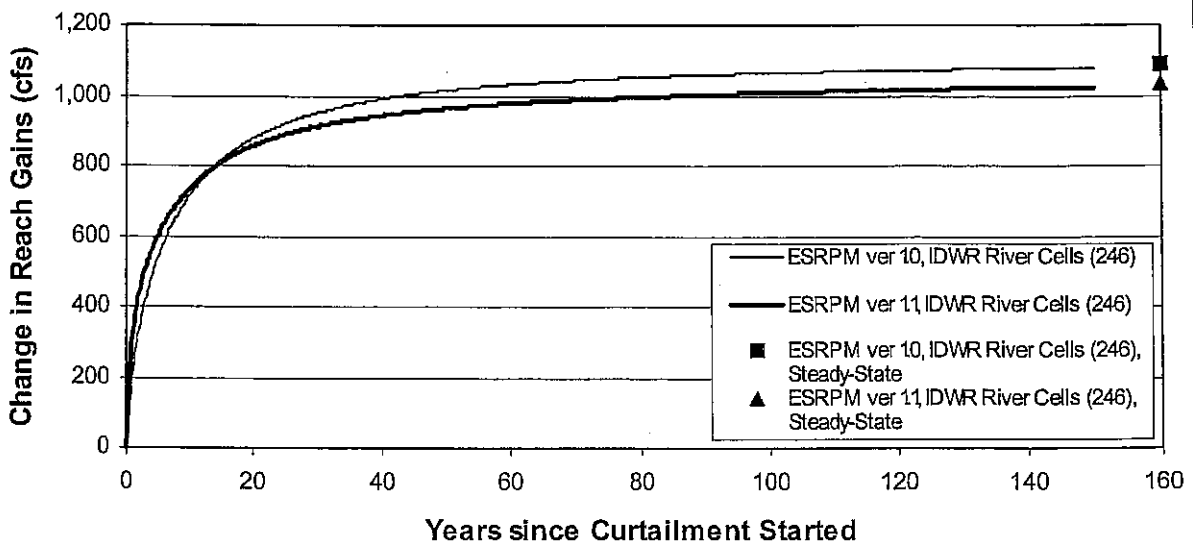
### Change in Reach Gains Due to Curtailment of 1870 and Later Groundwater Rights Heise to Shelley



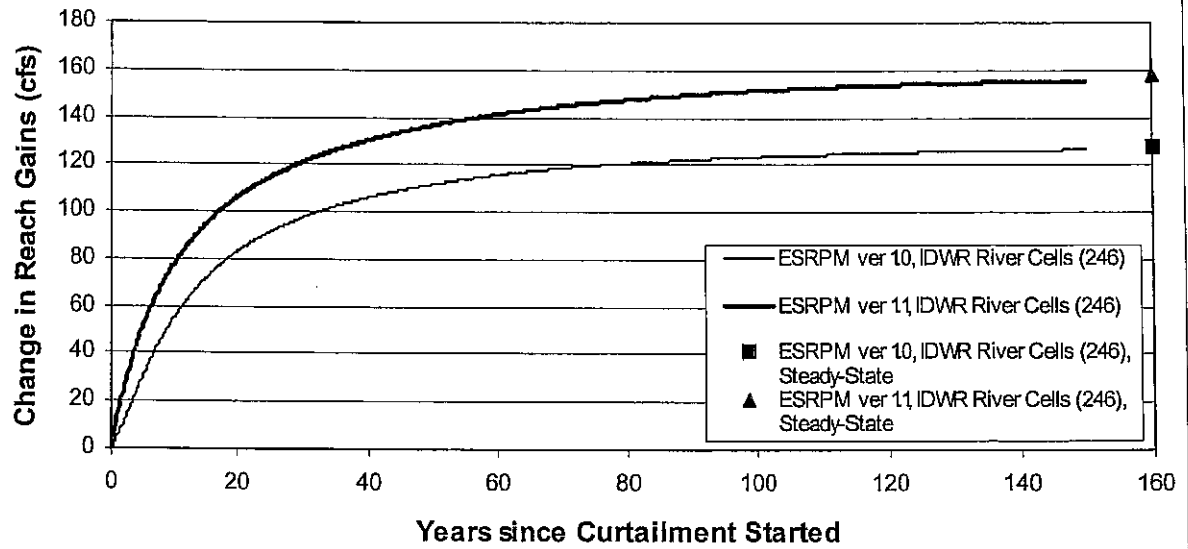
### Change in Reach Gains Due to Curtailment of 1870 and Later Groundwater Rights Shelley to nr Blackfoot



### Change in Reach Gains Due to Curtailment of 1870 and Later Groundwater Rights Nr Blackfoot to Neeley



**Change in Reach Gains Due to Curtailment of  
1870 and Later Groundwater Rights  
Neeley to Minidoka**



**Table 1 Comparison of Changes in Reach Gain Results between Curtailment Scenario for ESRPM versions 1.0 and 1.1**

<b>Version 1.0 Reach Gain/Loss (cfs)</b>					
	<b>Years since Curtailment Started</b>				
	<b>20</b>	<b>50</b>	<b>100</b>	<b>150</b>	<b>Steady State</b>
Ashton to Rexburg	333	383	391	393	394
Heise to Shelley	140	157	160	161	162
Shelley to nr Blackfoot	271	309	321	326	328
nr Blackfoot to Neeley	877	1,015	1,064	1,078	1,088
Neeley to Minidoka	83	112	123	126	128
<b>TOTAL</b>	<b>1,724</b>	<b>2,026</b>	<b>2,159</b>	<b>2,234</b>	<b>2,100</b>
<b>Version 1.1 Reach Gain/Loss (cfs)</b>					
	<b>Years since Curtailment Started</b>				
	<b>20</b>	<b>50</b>	<b>100</b>	<b>150</b>	<b>Steady State</b>
Ashton to Rexburg	283	310	313	315	316
Heise to Shelley	192	206	209	210	211
Shelley to nr Blackfoot	344	382	397	402	404
nr Blackfoot to Neeley	857	964	1,008	1,023	1,033
Neeley to Minidoka	106	137	151	156	158
<b>TOTAL</b>	<b>1,802</b>	<b>2,049</b>	<b>2,178</b>	<b>2,256</b>	<b>2,122</b>
<b>Difference Between Versions 1.0 and 1.1 Reach Gain/Loss (cfs)</b>					
	<b>Years since Curtailment Started</b>				
	<b>20</b>	<b>50</b>	<b>100</b>	<b>150</b>	<b>Steady State</b>
Ashton to Rexburg	-50	-73	-78	-78	-78
Heise to Shelley	52	49	49	49	49
Shelley to nr Blackfoot	73	73	76	76	76
nr Blackfoot to Neeley	-20	-51	-56	-55	-55
Neeley to Minidoka	23	25	28	30	30
<b>TOTAL ABSOLUTE CHANGE</b>	<b>218</b>	<b>271</b>	<b>287</b>	<b>288</b>	<b>288</b>
<b>Difference Between Versions 1.0 and 1.1 Reach Gain/Loss (% change)</b>					
	<b>Years since Curtailment Started</b>				
	<b>20</b>	<b>50</b>	<b>100</b>	<b>150</b>	<b>Steady State</b>
Ashton to Rexburg	-15%	-19%	-20%	-20%	-20%
Heise to Shelley	37%	31%	31%	30%	30%
Shelley to nr Blackfoot	27%	24%	24%	23%	23%
nr Blackfoot to Neeley	-2%	-5%	-5%	-5%	-5%
Neeley to Minidoka	28%	22%	23%	24%	23%

## Exhibit F

**Koreny, John S.**

---

**From:** Raymondi, Rick [Rick.Raymondi@idwr.idaho.gov]  
**Sent:** Thursday, October 13, 2005 7:41 AM  
**To:** Adam DeVoe (E-mail); Carlson, Ron; James Lochhead (E-mail); James Tucker (E-mail); Jeff Fereday (E-mail); John Rosholt (E-mail); John Simpson (E-mail); Josephine Beeman (E-mail); Kathleen Carr (E-mail); Kent Fletcher (E-mail); Matt Howard (E-mail); Merritt, Allen; Michael Gilmore (E-mail); Mike Creamer (E-mail); Roger Ling (E-mail); Rounds, Lewis; Sarah Klahn (E-mail); Scott L. Campbell (E-mail); Terry Uhling (E-mail); Tom Arkoosh (E-mail); Travis Thompson (E-mail); Yenter, Cindy (Hodges); Allan Wylie; Anderson, Hal; Bryan Kenworthy; Bryce Contor (E-mail); Christian Petrich (E-mail); Chuck Brendecke (E-mail); Chuck Brockway; Donna Cosgrove (E-mail); Dreher, Karl; Gary Johnson (E-mail); Greg Sullivan (E-mail); Jack Harrison (E-mail); Jim Bartolino (E-mail); Koreny, John S.; Jon Gould; Karl Tarbet; Kathy Peter (E-mail); Lindgren, John; P. E. Jonathon C. Bowling (E-mail); Paul Rauch; RD Schmidt (E-mail); Rick Allen (E-mail); Steve Lipscomb (E-mail); Tim Miller; Vincent, Sean Robbins, Liz  
**Cc:**  
**Subject:** pre- and post-processor .com and .for files used to run the Water Rights Accounting Model  
**Attachments:** Rick Raymondi (E-mail).vcf



Rick Raymondi  
(E-mail).vcf (88...

The IDWR has posted a new file: ADD\_SNK\_FOR\_COM\_PP.zip on the ftp site.  
The file is used to run the Water Rights accounting model.

<<Rick Raymondi (E-mail).vcf>>



## Exhibit G

**Koreny, John S.**

---

**From:** Raymondi, Rick [Rick.Raymondi@idwr.idaho.gov]  
**Sent:** Monday, October 17, 2005 9:52 AM  
**To:** Adam DeVoe (E-mail); Carlson, Ron; James Lochhead (E-mail); James Tucker (E-mail); Jeff Fereday (E-mail); John Rosholt (E-mail); John Simpson (E-mail); Josephine Beeman (E-mail); Kathleen Carr (E-mail); Kent Fletcher (E-mail); Matt Howard (E-mail); Merritt, Allen; Michael Gilmore (E-mail); Mike Creamer (E-mail); Roger Ling (E-mail); Rounds, Lewis; Sarah Klahn (E-mail); Scott L. Campbell (E-mail); Terry Uhling (E-mail); Tom Arkoosh (E-mail); Travis Thompson (E-mail); Yenter, Cindy (Hodges); Allan Wylie; Anderson, Hal; Bryan Kenworthy; Bryce Contor (E-mail); Christian Petrich (E-mail); Chuck Brendecke (E-mail); Chuck Brockway; Donna Cosgrove (E-mail); Dreher, Karl; Gary Johnson (E-mail); Greg Sullivan (E-mail); Jack Harrison (E-mail); Jim Bartolino (E-mail); Koreny, John S.; Jon Gould; Karen Wogsland (E-mail); Kari Tarbet; Kathy Peter (E-mail); Lindgren, John; P. E. Jonathon C. Bowling (E-mail); Paul Rauch; RD Schmidt (E-mail); Rick Allen (E-mail); Steve Lipscomb (E-mail); Tim Miller; Vincent, Sean  
**Cc:** 'kkc@hydrosphere.com'; Shaw, Kristine  
**Subject:** FW: ftp posting

Please note the new posting of information related to the Water Rights Accounting Model.

> -----Original Message-----

> From: Vincent, Sean  
> Sent: Monday, October 17, 2005 10:46 AM  
> To: Raymondi, Rick  
> Subject: ftp posting  
>  
> Rick,  
> I posted the file SNAKST005.rpt;11 on the IDWR ftp site. This water  
> accounting model output file was used for development of the  
> Supplemental Order Amending Replacement Water Requirements dated July 22, 2005.  
>  
> Sean  
> 208-287-4853  
>